Air Quality Permitting
Statement of Basis

July 6, 2005

Permit to Construct No. P-040118

Degerstrom Corporation
Spokane, Washington
Portable Hot Mix Asphalt Plant

Facility ID No. 777-00346

Prepared by:

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AIR QUALITY DIVISION

FINAL

Table of Contents

Acronyms, Units, and Chemical Nomenclatures

AAC	Acceptable Ambient Concentration for Non-carcinogenic Compounds
AACC	Acceptable Ambient Concentrations for Carcinogenic Compounds
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
EPA	U.S. Environmental Protection Agency
gr/dscf	grain (1 lb = 7,000 grains) per dry standard cubic foot
HAPs	Hazardous Air Pollutants
HMA	hot mix asphalt
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pound per hour
MACT	Maximum Achievable Control Technology
MMBtu/hr	million British thermal units per hour
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_X	nitrogen oxides
NSPS	New Source Performance Standards
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
RAP	Recycled asphalt pavement
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SO_2	sulfur dioxide
TAP	toxic air pollutant
T/yr	tons per year
$\mu g/m^3$	micrograms per cubic meter
UTM	Universal Transverse Mercator
VOC	volatile organic compound

1. PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01.200, Rules for the Control of Air Pollution in Idaho, for issuing permits to construct.

2. FACILITY DESCRIPTION

This portable hot-mix asphalt facility combines aggregate and asphalt cement in a rotary drum dryer to produce asphalt. Power is generated on site with a 500 kilowatt generator. Dryer emissions are controlled with a baghouse.

3. FACILITY / AREA CLASSIFICATION

Degerstrom Corporation is defined as a synthetic minor facility because, without permit limits on the potential to emit, the NO_x and CO emissions would exceed 100 tons per year each. The AIRS classification is "SM" because the asphalt throughput limit restricts the potential to emit to less than 100 tons per year for any criteria pollutant, 10 tons per year for any single HAP, or 25 tons per year for any combination of HAPs.

The AIRS information provided in Appendix A defines the classification for each regulated air pollutant at the Degerstrom Corporation HMA plant. This required information is entered into the EPA AIRs database.

4. APPLICATION SCOPE

The purpose of this permit to construct is initial permitting of an existing facility located in Washington state for work in the state of Idaho.

4.1 Application Chronology

August 18, 2004	DEQ received application for permit to construct
September 10, 2004	Application determined incomplete
May 5, 2005	DEQ received amended application for permit to construct
May 18, 2005	Application determined complete
June 8, 2005	Draft PTC was sent to Degerstrom Corporation

5. PERMIT ANALYSIS

This section of the Statement of Basis describes the regulatory requirements for this PTC action.

5.1 Equipment Listing

Hot Mix Asphalt Plant

Manufacturer: Astec

Type of HMA plant: portable drum dryer

Max asphalt capacity: 250 T/hr

HMA burner fuel type: distillate fuel oil (ASTM Grade 1 fuel oil and ASTM Grade 2 fuel oil)

Max. HMA burner fuel usage rate: 279 gal/hr

Max rated heat input requirements: 39 MMBtu/hr

Baghouse

Manufacturer: Astec

Stack specifics: 35,000 actual cubic feet per minute stack flow at 240 degrees F; 21.92 ft stack height; 27.5 inches by 41 inches stack cross sectional dimensions.

Generator

Manufacturer: Cummings

Output: 500 kW or 670 horsepower at 4.24 MMBtu/hr heat input

Fuel: distillate fuel oil (ASTM Grade 1 fuel oil and ASTM Grade 2 fuel oil); maximum fuel use of 30.4 gallons per hour

5.2 Emissions Inventory

The emission estimates for this permitting action are based on AP-42 emission factors.
The permit limits are summarized below:

- Throughput limit: 275,000 T/yr
- Allowable fuel: distillate fuel oil (ASTM Grade 1 fuel oil and ASTM Grade 2 fuel oil)

The facility is limited only to yearly production because no short-term NAAQS were exceeded. The yearly production limit:

- Limits NO_x and CO emissions to synthetic minor source status (less than 100 tons per year)
- Limits the nickel and formaldehyde emissions to less than their AACCs.

The emissions estimates are summarized in Table 5.2. The estimates are based on a production rate of 250 tons per hour and 275,000 tons per year. A detailed emission inventory is included as Appendix B.

Table 5.2 EMISSIONS ESTIMATES

Pollutant	Maximum Emissions (lb/hr)[a]	Maximum Emissions (T/yr)[b]
PM (total)	9.5	5.2
PM_{10} (total)	7.0	3.9
CO	36.5	20.1
NO_x	32.1	17.7
SO_2	4.0	2.2
VOC[c]	9.5	5.2

a) Pounds per hour
b) Tons per year

5.3 Modeling

DEQ reviewed the modeling analysis submitted by the facility and determined that it followed the DEQ Air Quality Modeling Guideline and demonstrated compliance with the applicable regulatory limits to DEQ's satisfaction.

The ambient pollutant concentrations are shown in Table 5.3.

Table 5.3 AMBIENT POLLUTANT CONCENTRATIONS

Pollutant	Averaging Period	Total Ambient Impact[a] ($\mu g/m^3$)[b]	Background Concentration ($\mu g/m^3$)	Total Ambient Concentration[c] ($\mu g/m^3$)	NAAQS[c] ($\mu g/m^3$)	Percent of NAAQS[c]
CO	8-hour	199	5130	5329	10,000	53
	1-hour	284	11400	11684	40,000	29
NO_2	Annual	42	40	82	100	82
SO_2	Annual	4	23.5	28	80	35
	24-hour	18	144	162	365	44
	3-hour	41	543	584	1,300	45
PM_{10}	Annual	5	32.7	38	50	76
	24-hour	26	100	126	150	84

a. Impact from facility-wide emissions
b. Micrograms per cubic meter
c. National Ambient Air Quality Standards

The modeled concentrations, including the background, are less than the NAAQS.

5.4 Regulatory Review

This section describes the regulatory analysis of the applicable air quality rules with respect to this PTC.

IDAPA 58.01.01.201 ..... Permit to Construct Required

Degerstrom Corporation, headquartered in Washington State, requested a Permit to Construct for their existing portable hot mix asphalt plant. The Permit to Construct will enable Degerstrom to operate in Idaho.

40 CFR 60, Subpart I..... Standards of Performance for Hot Mix Asphalt Facilities

This subpart is applicable to the facility according to 60.90 (a), as follows: "*(a) The affected facility to which the provisions of this subpart apply is each hot mix asphalt facility. For the purpose of this subpart, a hot mix asphalt facility is comprised only of any combination of the following: dryers; systems for screening, handling, storing, and weighing hot aggregate; systems for loading, transferring, and storing mineral filler, systems for mixing hot mix asphalt; and the loading, transfer, and storage systems associated with emission control systems.*" Also, per 60.90(b), this system "*commences construction or modification after June 11, 1973.*" This hot mix asphalt facility was initially constructed in 1984.

Section 60.92, Standard for particulate matter, states: *(a) On and after the date on which the performance test required to be conducted by 60.8 is completed, no owner or operator subject to the provisions of this subpart shall discharge or cause the discharge into the atmosphere from any affected facility any gases which: (1) Contain particulate matter in excess of 90 mg/dscm (0.04 gr/dscf). (2) Exhibit 20 percent opacity, or greater.*

40 CFR 60.93(b)(2) specifies that Method 9 and the procedures in 60.11 be used to determine opacity. Permit Conditions 2.4 and 2.5 have been modified to more accurately incorporate the 40 CFR 60.92 requirements. Permit Condition 2.17 requires particulate emissions testing. Permit Condition 2.23 requires that a test protocol be submitted prior to testing, and Permit Condition 2.24 requires that the test results be submitted to DEQ within 30 days after the date that the testing is concluded.

The IDEQ recognizes emissions tests conducted in other states, pending IDEQ review and approval. See the discussion in Section 6 *Permit Conditions* of this memo for in depth discussion of emission testing requirements.

In addition to the testing required by Subpart I, the facility is required to test the affected facility for particulate emissions and visible emissions at least once every five years.

40 CFR 60 Subpart OOO ..... Standards of Performance for Nonmetallic Mineral Processing Plants

Subpart OOO does not apply to this facility.

The section for applicability and designation of affected facility, 60.670 (a)(1), is as follows: *"Except as provided in paragraphs (a)(2), (b), (c), and (d) of this section, the provisions of this subpart are applicable to the following affected facilities in fixed or portable nonmetallic mineral processing plants: each crusher, grinding mill, screening operation, bucket elevator, belt conveyor, bagging operation, storage bin, enclosed truck or railcar loading station. Also, crushers and grinding mills at hot mix asphalt facilities that reduce the size of nonmetallic minerals embedded in recycled asphalt pavement and subsequent affected facilities up to, but not including, the first storage silo or bin are subject to the provisions of this subpart."*

[break in section]

"(b) An affected facility that is subject to the provisions of subpart F or I or that follows in the plant process any facility subject to the provisions of subparts F or I of this part is not subject to the provisions of this subpart."

Subpart F is for portland cement plants. Subpart I is for hot mix asphalt facilities.

In addition, this facility is subject to Subpart I, and, per Subpart OOO (b), Subpart OOO is not applicable to facilities which are subject to Subpart I.

5.5 Fee Review

Degerstrom paid the $1,000 application fee as required in IDAPA 58.01.01.224 on August 18, 2004.

A permit to construct processing fee of $5,000 is required in accordance with IDAPA 58.01.01.225, because the increase in emissions is 54.2 tons per year. The $5,000 was received on June 15, 2005.

The Degerstrom Corporation facility is not a major facility as defined in IDAPA 58.01.01.008.10. Therefore, registration fees are not applicable in accordance with IDAPA 58.01.01.387.

6. PERMIT CONDITIONS

Permit Condition 2.3 *Emission Limits*

The NO_x and CO emissions are limited because the emissions have the potential to exceed maximum source category thresholds (100 tons per year) if the facility were not throughput limited. The emissions from the drum dryer and generator were estimated at the limited permitted production throughput rate of 275,000 tons of asphalt per year. The calculated emissions, using AP-42 emissions factors, will not exceed the amount estimated in the application as long as the permitted throughput is not exceeded.

Permit Condition 2.17 *Performance Tests*

This Permit Condition states the NSPS requirements for performance testing and requires testing at least once every five years. The IDEQ recognizes emissions tests conducted in other states, pending IDEQ review and approval; therefore, a performance test conducted within the last five years, as well as any correspondence from the state of Washington with respect to the test, can be submitted to the IDEQ regional office for review and approval. Approval by IDEQ will allow the test as representative of facility operations, and qualify the test as satisfying Permit Condition 2.17.

7. PERMIT REVIEW

7.1 Facility Review of Draft Permit.

A draft permit was provided for facility review on June 8, 2005.

7.2 Regional Review of Draft Permit

The draft permit was also provided to the DEQ Coeur d'Alene Regional Office on June 8, 2005.

7.3 Public Comment

An opportunity for public comment period on the PTC application was provided, in accordance with IDAPA 58.01.01.209.01.c.

8. RECOMMENDATION

Based on review of application materials, and all applicable state and federal rules and regulations, staff recommend that Degerstrom Corporation be issued PTC No. P-040118 for a portable hot-mix asphalt facility. The project does not involve PSD requirements.

CM/sd Permit No. P-040118

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APPENDIX A

AIRS Information

P-040118

AIRS/AFS[a] FACILITY-WIDE CLASSIFICATION[b] DATA ENTRY FORM

Facility Name: *Degerstrom Corporation*
Facility Location: Portable hot mix asphalt plant
AIRS Number: 777-00346

AIR PROGRAM POLLUTANT	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	SM80	TITLE V	AREA CLASSIFICATION A-Attainment U-Unclassified N- Nonattainment
SO_2	B							U or A only
NO_x	SM							U or A only
CO	SM							U or A only
PM_{10}	B		B					U or A only
PT (Particulate)	B							U or A only
VOC	B							U or A only
THAP (Total HAPs)	B							U or A only
			APPLICABLE SUBPART					
			I					

[a] Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

[b] AIRS/AFS Classification Codes:

A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For HAPs only, class "A" is applied to each pollutant which is at or above the 10 T/yr threshold, or each pollutant that is below the 10 T/yr threshold, but contributes to a plant total in excess of 25 T/yr of all HAPs.

SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.

B = Actual and potential emissions below all applicable major source thresholds.

C = Class is unknown.

ND = Major source thresholds are not defined (*e.g., radionuclides*).

APPENDIX B

Emission Inventory

P-040118

Estimated Criteria Pollutant Emissions

Source	Emission Factor			Emissions			Facility total	
		units	source	lb/hr	lb/yr	T/yr	lb/hr	T/yr
HMA Plant:								
NOx	0.055	lb/T	1	13.75	15,125	7.6	32.1	17.7
CO	0.13	lb/T	1	32.50	35,750	17.9	36.5	20.1
SO_2	0.011	lb/T	1	2.75	3,025	1.5	4.0	2.2
PM	0.033	lb/T	1	8.25	9,075	4.5	9.5	5.2
PM_{10}	0.023	lb/T	1	5.75	6,325	3.2	7.0	3.9
VOC	0.032	lb/T	1	8.00	8,800	4.4	9.5	5.2
Lead	1.50E-05	lb/T	1	3.75E-03	4	2.06E-03	3.75E-03	2.06E-03
Deisel Generator:								
NOx	4.41	lb/MMBtu	2	18.37	20,203	10.1		
CO	0.95	lb/MMBtu	2	3.96	4,352	2.2		
SO_2	0.29	lb/MMBtu	2	1.21	1,329	0.7		
PM	0.31	lb/MMBtu	2	1.29	1,420	0.7		
PM_{10}	0.31	lb/MMBtu	2	1.29	1,420	0.7		
VOC	0.35	lb/MMBtu	2	1.46	1,603	0.8		

All operations are based on 1100 hr/yr.

HMA plant based on:

250 T/hr; 279 gal/hr #2 fuel;

Generator set based on:

500 kW; 30.4 gal/hr #2 fuel, @ 137,000 Btu/gal =

4.1648 MMBtu/hr.

Emission factor sources:

1. AP-42 Chapter 11.1; March 2004.
2. AP-42 Chapter 3.3; October 1996.

Estimated TAP/HAP Emissions

Source	Emission Factor			Emissions			Facility total	
		units	source	lb/hr	lb/yr	T/yr	lb/hr	T/yr
HMA Plant:								
Arsenic	5.60E-07	lb/T	1	1.40E-04	0.15	7.70E-05	1.40E-04	7.70E-05
Nickel	6.30E-05	lb/T	1	1.58E-02	17.33	8.66E-03	1.58E-02	8.66E-03
Benzene	0.00028	lb/T	1	0.07	77	3.85E-02	0.07	0.04
Ethylbenzene	0.00220	lb/T	1	0.55	605	3.03E-01	0.55	0.30
Toluene	0.00100	lb/T	1	0.25	275	1.38E-01	0.25	0.14
Xylene	0.00270	lb/T	1	0.68	743	3.71E-01	0.68	0.37
Formaldehyde	0.00074	lb/T	1	0.19	204	1.02E-01	0.19	0.10
Benzo(a)pyrene	9.80E-09	lb/T	1	2.45E-06	2.70E-03	1.35E-06	3.23E-06	1.78E-06
1,3 Butadiene	-						1.62E-04	8.93E-05
PAH	5.48E-07	lb/T	1	0.0001	0.15	7.53E-05	1.51E-04	8.32E-05
Deisel Generator:								
Benzene	9.33E-04	lb/MMBtu	2	0.004	4	2.14E-03		
Ethylbenzene	no data	lb/MMBtu	2					
Toluene	4.09E-04	lb/MMBtu	2	0.002	2	9.37E-04		
Xylene	2.85E-04	lb/MMBtu	2	0.001	1	6.53E-04		
Formaldehyde	1.18E-03	lb/MMBtu	2	0.005	5	2.70E-03		
Benzo(a)pyrene	1.88E-07	lb/MMBtu	2	7.83E-07	8.61E-04	4.31E-07		
1,3 Butadiene	3.90E-05	lb/MMBtu	2	1.62E-04	1.79E-01	8.93E-05		
PAH	3.43E-06	lb/MMBtu	2	1.43E-05	1.57E-02	7.86E-06		

All operations are based on 1100 hr/yr.

HMA plant based on:

250 T/hr; 279 gal/hr #2 fuel;

Generator set based on:

500 kW; 30.4 gal/hr #2 fuel, @ 137,000 Btu/gal =

4.1648 MMBtu/hr.

Emission factor sources:

1. AP-42 Chapter 11.1; March 2004.
2. AP-42 Chapter 3.3; October 1996.

APPENDIX C

Modeling Summary

P-040118

MEMORANDUM

DATE: May 16, 2005

TO: File, Air Quality Division

FROM: Charlie Mazzone, Air Permitting Analyst, Air Quality Division

PROJECT NUMBER: P-040118

SUBJECT: Modeling Review for the Degerstrom Corporation's Portable Hot Mix Asphalt Plant

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1. SUMMARY

Based on the results of the analyses, DEQ has determined that the modeling analysis: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data; 3) appropriately adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed that predicted pollutant concentrations at all receptor locations, when appropriately combined with background concentrations, were below stated air quality standards.

2. BACKGROUND INFORMATION

2.1 Applicable Air Quality Impact Limits

The facility is a portable hot mix asphalt plant, and therefore uses background concentrations developed for portable sources.

Table 2.1 Applicable Regulatory Limits

Pollutant	Averaging Period	Significant Contribution Levels ($\mu g/m^3$)	Regulatory Limit ($\mu g/m^3$)
PM_{10}	Annual	1	50
	24-hour	5	150
CO	8-hour	500	10,000
	1-hour	2000	40,000
SO_2	Annual	1	80
	24-hour	5	365
	3-hour	25	1,300
NO_2	Annual	1	100

2.2 Background Concentrations

DEQ updated the background concentration data for Idaho in the Spring of 2003[1].

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[1] Hardy, Rick and Schilling, Kevin. *Background Concentrations for Use in New Source Review Dispersion Modeling*. Memorandum to Mary Anderson, March 14, 2003.

Table 2.2 Background Concentrations

Pollutant	Averaging Period	Background concentrations ($\mu g/m^3$)[a]
PM_{10}	24-hour	100
	Annual	32.7
CO	1-hour	11400
	8-hour	5130
SO_2	3-hour	543
	24-hour	144
	Annual	23.5
NO_2	Annual	40

a. Micrograms per cubic meter.

3. ASSESSMENT OF MODELING ANALYSIS

All modeled emission rates are derived from potential to emit – that is, full time (8,760 hours per year) operations at maximum production capacity. Full impact modeling results show that all criteria pollutants are compliant with the NAAQS; however, the Toxic Air Pollutants nickel and formaldehyde failed to comply with the annual-averaging derived AACCs. See the discussion under section 3.4.3 *Toxic Air Pollutant Results.*

3.1 Modeling Methodology

The Screen3 modeling analysis used default regulatory model options.

Table 3.1 Modeling Parameters

Parameter	What Facility Submitted	DEQ's Review/Determination
Model Selection	Screen3	Screen3
Meteorological Data	Screening	Screening
Model Options	Regulatory default	Regulatory default
Land Use	Rural	Rural
Terrain	Simple	Simple
Building Downwash	None	None
Receptor Network	Default	Default
Facility Layout	NA	NA

3.2 Emission Rates

Emission rates for the two point sources associated with this facility are summarized in Table 3.2.

Table 3.2 Emission Rates

Source/specie	Pound per hour emissions			
	NOx	CO	SO_2	PM_{10}
Drum Dryer	13.75	32.50	2.75	5.75
Generator	67.67	14.58	4.45	4.76

3.3 Emission Release Parameters

Table 3.3 Stack Data

Source	Flow acfm	Area		Velocity		Height		Temperature	
		ft^2	m^2	ft/s	m/s	ft	m	F	K
Drum dryer	35,000	7.83	0.73	74.50	22.71	21.92	6.68	240	388.71
Generator	3,135	0.26	0.02	197.76	60.28	12.5	3.81	872	739.82

3.4 Results

3.4.1 Significant Impact Analysis Results

Table 3.4 Significant Impact Analysis Results

Pollutant	Averaging Period	Source Contribution ($\mu g/m^3$)	Significant Contribution Levels ($\mu g/m^3$)	Exceeds the SCL (Y or N)
PM_{10}	24-hour	26	5	Y
	Annual	5	1	Y
CO	1-hour	284	2000	N
	8-hour	199	500	N
SO_2	3-hour	41	25	Y
	24-hour	18	5	Y
	Annual	4	1	Y
NO_2	Annual	42	1	Y

3.4.2 Full Impact Analysis Results

Table 3.5 Full Impact Analysis Results

Pollutant	Averaging Period	Source Contribution ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Ambient concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Percent of NAAQS
PM_{10}	24-hour	26	100	126	150	84
	Annual	5	32.7	38	50	76
CO	1-hour	284	11400	11,684	40,000	29
	8-hour	199	5130	5,329	10,000	53
SO_2	3-hour	41	543	584	1,300	45
	24-hour	18	144	162	365	44
	Annual	4	23.5	28	80	35
NO_2	Annual	42	40	82	100	82

3.4.3 *Toxic Air Pollutants Results*

Table 3.6 summarizes the modeling results for Toxic Air Pollutants (TAPs). No non-carcinogens approached concentrations of concern. The TAPs formaldehyde and nickel failed to meet the annual averaging period AACC concentrations based on full time (8,760 hours per year) operations at full capacity (250 tons per hour). Therefore, the facility will limit asphalt production from the maximum production capacity (2,190,000 tons per year) to 275,000 tons per year, or 12.6 percent of potential maximum production. Table 3.7 summarizes the maximum concentrations based on the production limit.

Table 3.6 Toxic Air Pollutant Results

Pollutant	Averaging Period	Maximum Concentration ($\mu g/m^3$)	AACC ($\mu g/m^3$)	Percent of AACC
Carcinogens	Annual			
Arsenic		1.1E-04	2.30E-04	44.0
Benzene		0.06	0.12	52.0
Benzo(a)pyrene		4.16E-06	3.00E-04	1.4
1,3 Butadiene		4.96E-04	3.60E-03	13.8
Cadmium		7.41E-05	5.6E-04	13.2
Chromium VI		8.14E-05	8.3E-05	98.1
Formaldehyde		0.15	0.077	193.1
Nickel		1.14E-02	4.20E-03	271.0
PAH		1.43E-04	1.40E-02	1.0

Table 3.7 Production Limited Toxic Air Pollutant Results

Maximum asphalt production (T/yr)	Limited asphalt production (T/yr)	Percent change	TAP	Maximum production concentration ($\mu g/m^3$)	Limited production concentration[1] ($\mu g/m^3$)	AACC ($\mu g/m^3$)	Percent of AACC
2,190,000	275,000	-87.44%					
			formaldehyde	0.1487	0.0187	0.077	24%
			nickel	0.0114	0.0014	0.0042	34%

1: the percent change in production is applied to the annual averaging period TAP concentration.